AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An adaptive transmitter in a wireless communication system using frequency division duplexing, comprising:

a modulation and encoding method and transmit power determining unit for determining an antenna method, a modulation and encoding method, and a corresponding transmit power according to parameters (received log likelihood ratio parameters) fed back from a receiver, the parameters including a mean and a normalized standard deviation of SNRs calculated by the receiver; and

an encoder and modulator for adaptively transmitting the traffic data to the receiver according to the antenna method, the modulation and encoding method, and the transmit power determined by the modulation and encoding method and transmit power determining unit, wherein the transmit power is ~~determined to be~~ equal to a sum of a first compensated power value Pmean, a second compensated power value Pstd, and ~~one or more additional power values~~a pre-determined transmit power, wherein Pmean corresponds to a difference between the mean of the SNRs and a predefined mean SNR for the determined antenna method, the modulation and the encoding method, ~~and~~ Pstd corresponds to the normalized standard deviation of the SNRs, and the pre-determined transmit power is used to transmit a pilot or a preamble to the receiver.

2. (Previously Presented) The adaptive transmitter of claim 1, wherein the modulation and encoding method and transmit power determining unit comprises:

a per-modulation-encoding-method target mean received SNR (signal to noise ratio) table for predefining target mean received SNR per modulation encoding method;

a transmit power increase table for establishing per-modulation-encoding-method compensated power values that correspond to the received log likelihood ratio parameters fed back from the receiver;

a transmit power determining unit for using the compensated power value output from the per-modulation-encoding-method target mean received SNR table and the compensated power value output from the transmit power increase table according to the received log likelihood ratio parameters and determining compensated power values of the corresponding antenna method, the modulation method, and the encoding method; and

an antenna/modulation/encoding method determining unit for determining the antenna method and the modulation and encoding method corresponding to the compensated power values determined by the transmit power determining unit, and outputting them to the encoder and modulator.

3. (Previously Presented) The adaptive transmitter of claim 1, wherein the received log likelihood ratio parameters include the mean and the normalized standard deviation of the SNRs calculated by the receiver from at least one of a combined channel gain or a spatial channel gain.

4. (Previously Presented) The adaptive transmitter of claim 1, wherein the modulation and encoding method and transmit power determining unit comprises:

a per-modulation-encoding-method target mean received SNR table for presetting target mean SNR per modulation encoding method;

a transmit power increase table for setting per-modulation-encoding-method compensated power values corresponding to the normalized standard deviation of the SNRs fed back from the receiver;

a transmit power determining unit for using the target power output from the per-modulation-encoding-method target mean received SNR table, the compensated power value according to the mean of the SNRs fed back from the receiver, and the compensated power value output by the transmit power increase table according to the normalized standard deviation of the fed-back SNRs, and determining the compensated power values on the corresponding antenna method and the modulation and encoding method; and

an antenna/modulation/encoding method determining unit for determining the antenna method and the modulation and encoding method which correspond to the compensated power values determined by the transmit power determining unit, and outputting them to the encoder and modulator.

5. (Previously Presented) The adaptive transmitter of claim 3, wherein the received log likelihood ratio parameters include the mean and the normalized standard deviation of combined SNRs calculated by the receiver in the case of using diversity transmission,

the parameters include the mean and the normalized standard deviation of spatial channel SNRs calculated by the receiver in the case of using spatial multiplexing transmission, and

the parameters include the mean and the normalized standard deviation of the combined SNRs calculated by the receiver, and the mean and the normalized standard deviation of the spatial channel SNRs calculated by the receiver in the case of using both diversity transmission and spatial multiplexing transmission.

6. (Currently Amended) An adaptive receiver in a wireless communication system using frequency division duplexing, comprising:

a demodulator and decoder for receiving signals from a transmitter, and demodulating and decoding the signals;

an SNR (signal to noise ratio) measuring unit for estimating channel gains or SNRs in a single code block through preambles or pilots output by the demodulator and decoder; and

a received log likelihood ratio parameter determining unit for finding parameters from the channel gains or the SNRs estimated by the SNR measuring unit, and feeding the parameters back for adaptive transmission of the transmitter, the parameters including a mean and a normalized standard deviation of the SNRs in the single code block,

wherein the receiver is to cause the transmitter to adjust transmit power to be equal to a sum of a first compensated power value Pmean, a second compensated power value Pstd, and a pre-determined transmit power, wherein Pmean corresponds to a difference between the mean of the SNRs and a predefined mean SNR for a determined antenna method, a modulation and a encoding method, Pstd corresponds to the normalized standard deviation of the SNRs, and the pre-determined transmit power is used to transmit the pilots or preambles.

7. (Previously Presented) The adaptive receiver of claim 6, wherein the received log likelihood ratio parameter determining unit comprises:

a diversity received log likelihood ratio parameter determining unit for calculating combined SNRs from the channel gains or the SNRs estimated by the SNR measuring unit, determining diversity received log likelihood ratio parameters, and outputting the parameters to the transmitter; and

a spatial multiplexing received log likelihood ratio parameter determining unit for calculating SNRs of spatial channels from the channel gains or the SNRs estimated by the SNR measuring unit, determining spatial multiplexing received log likelihood ratio parameters, and outputting the parameters to the transmitter.

8. (Previously Presented) The adaptive receiver of claim 7, wherein the diversity received log likelihood ratio parameter determining unit comprises:

a combined channel gain calculator for receiving per-transmit/receive-antenna channel gain or SNR for each symbol in a single code block from the SNR measuring unit, and finding a combined channel gain and a combined SNR of each symbol in the code block; and

a mean and normalized standard deviation calculator for finding the mean and the normalized standard deviation of the combined SNRs in the single code block obtained from the combined channel gain calculator, setting them as the diversity received log likelihood ratio parameters, and feeding the parameters back to the transmitter.

9. (Previously Presented) The adaptive receiver of claim 7, wherein the spatial multiplexing received log likelihood ratio parameter determining unit comprises:

a spatial channel gain calculator for receiving a channel gain matrix of each symbol in the single code block from the SNR measuring unit, and finding singular values of the matrix or the SNR of the respective spatial channels; and

a mean and normalized standard deviation calculator for finding the mean and the normalized standard deviation of the spatial channel gain or the spatial channel SNR in the single code block found from the spatial channel gain calculator, setting them as the spatial multiplexing received log likelihood ratio parameters, and feeding the parameters back to the transmitter.

10. (Currently Amended) An adaptive transmitting method of a wireless communication system using frequency division duplexing, comprising:

(a) transmitting a pilot or a preamble to a receiver by using a predefined transmit power;

(b) determining an antenna method, a modulation and encoding method, and a transmit power based on the parameters (received log likelihood ratio parameters) fed back from a

receiver, the parameters including a mean and a normalized standard deviation of SNRs calculated by the receiver, wherein the transmit power is ~~determined to be~~ equal to a sum of a first compensated power value Pmean, a second compensated power value Pstd, and ~~one or more additional power values~~a pre-determined transmit power, wherein Pmean corresponds to a difference between the mean of the SNRs and a predefined mean SNR for the determined antenna method, the modulation and the encoding method, ~~and~~ Pstd corresponds to the normalized standard deviation of the SNRs and the pre-determined transmit power is used to transmit the pilot or the preamble; and

(c) transmitting traffic data to the receiver by using the determined antenna method, the modulation and encoding method, and the transmit power.

11. (Previously Presented) The adaptive transmitting method of claim 10, wherein (b) comprises presetting and storing the performance of all the antenna/modulation/encoding methods used by an adaptive transmitter with respect to the pre-determined quantized values of the received log likelihood ratio parameters, and calculating transmit power needed for obtaining target performance on each antenna/modulation/encoding method from the received log likelihood ratio parameters fed back from the receiver.

12. (Previously Presented) The adaptive transmitting method of claim 10, wherein (b) comprises finding a transmit power needed for further compensating for the mean of received SNR for achieving target performance on the predefined antenna methods and the modulation and encoding methods, and a compensated transmit power for achieving target performance on the predefined antenna methods and the modulation and encoding methods from the received log likelihood ratio parameters fed back from the receiver.

13. (Previously Presented) The adaptive transmitting method of claim 10, wherein (b) comprises:

compensating for a difference between the mean of received SNR for achieving target performance on the predefined antenna methods and the modulation and encoding methods and the mean of the received SNR fed back from the receiver; and

finding a transmit power so as to compensate for a compensated transmit power further needed for achieving target performance on the predefined antenna methods and the modulation and encoding methods from the normalized standard deviation of the SNRs fed back from the receiver.

14. (Currently Amended) An adaptive receiving method of a wireless communication system using frequency division duplexing, comprising:

(a) estimating a complex channel gain (the complex channel gain being from a transmit antenna to a receive antenna) of each symbol in a single code block through a pilot or a preamble transmitted from a transmitter;

(b) calculating parameters (received log likelihood ratio parameters) including a mean and a normalized standard deviation of SNRs from the estimated complex channel gain (from a transmit antenna to a receive antenna) of each symbol in a single code block; and

(c) feeding the calculated received log likelihood ratio parameteres to the transmitter ~~for adaptive transmission in~~to cause the transmitter to adjust transmit power to be equal to a sum of a first compensated power value Pmean, a second compensated power value Pstd, and a pre-determined transmit power, wherein Pmean corresponds to a difference between the mean of the SNRs and a predefined mean SNR for a determined antenna method, a modulation and a encoding method, Pstd corresponds to the normalized standard deviation of the SNRs, and the pre-determined transmit power is used to transmit the pilot or the preamble.

15-16. (Cancelled)